

Maine Counties GIS Forum

How Can Geographic Information System Technology be Better Utilized by Maine County Government?

Black Bear Inn - Orono

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Introductions

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Counties Represented

Aroostook

Hancock

Knox

Penobscot

Piscataquis

Somerset

Waldo*

Washington*

Part 1: What is a GIS?

- **Definition**
- **Technology overview**
- **Data sets**
- **Applications**
 - How is GIS used in Municipal/County Government?

Definition of GIS

- Geographic Information System
- An **automated** system composed of **hardware, software, data** and **people** used to create, store, display and analyze spatial data and related attributes
- GIS is not new
 - Automated systems are replacing manual systems
- A GIS answers questions, such as:
 - “where is it?”
 - “what is it?”

Distinguishing Characteristics of GIS

- Map information is stored as **layers**
- Map features are connected to **descriptive database** information (**attributes**)
 - Interrogate the map
 - Click on something to ask what is this feature?
 - Perform a data base query, see a graphic result
 - Where are the things that meet these criteria?
- Related Technologies, include:
 - CAD
 - Remote sensing/satellite imagery
 - GPS

Data Stored as Layers

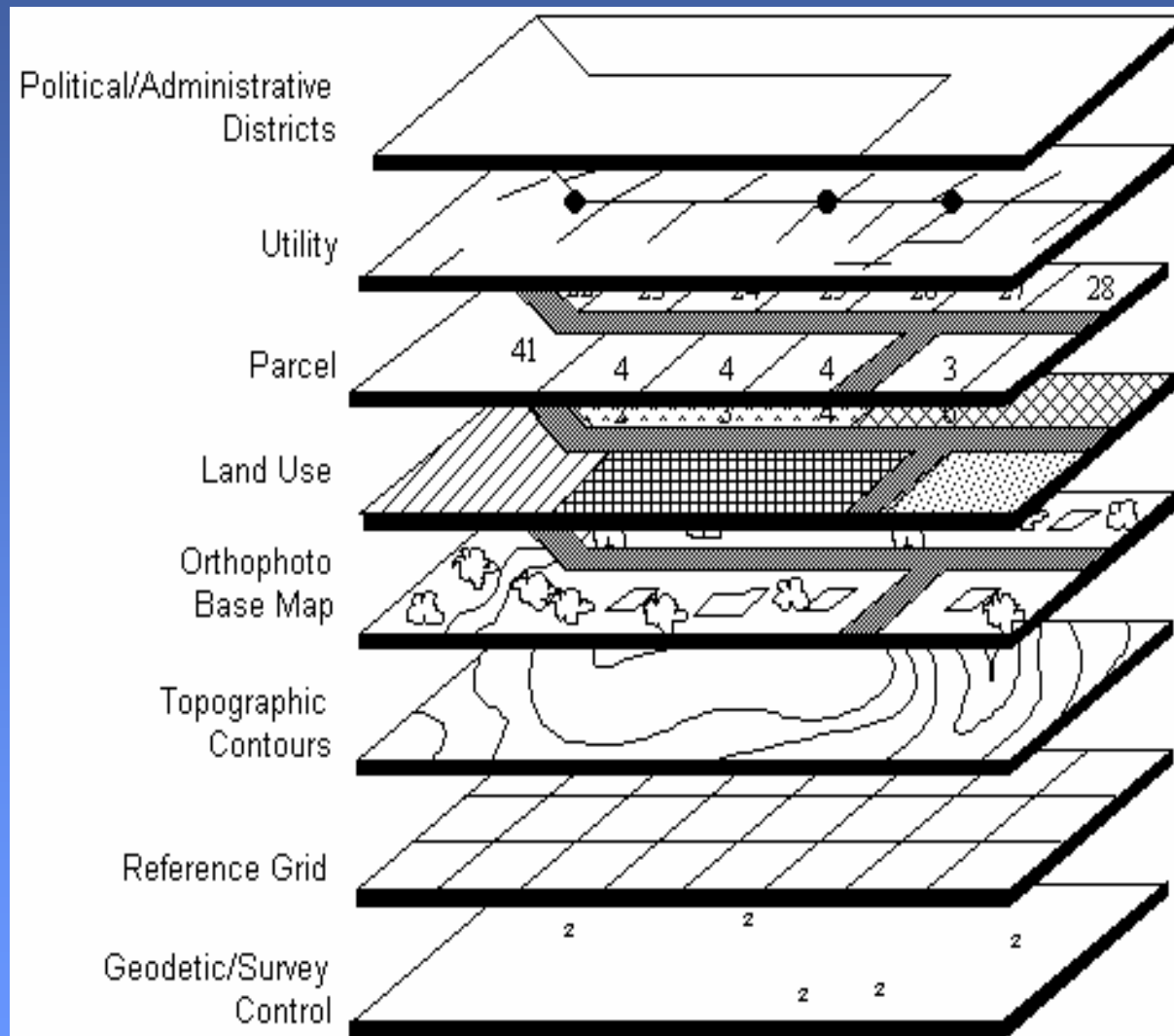
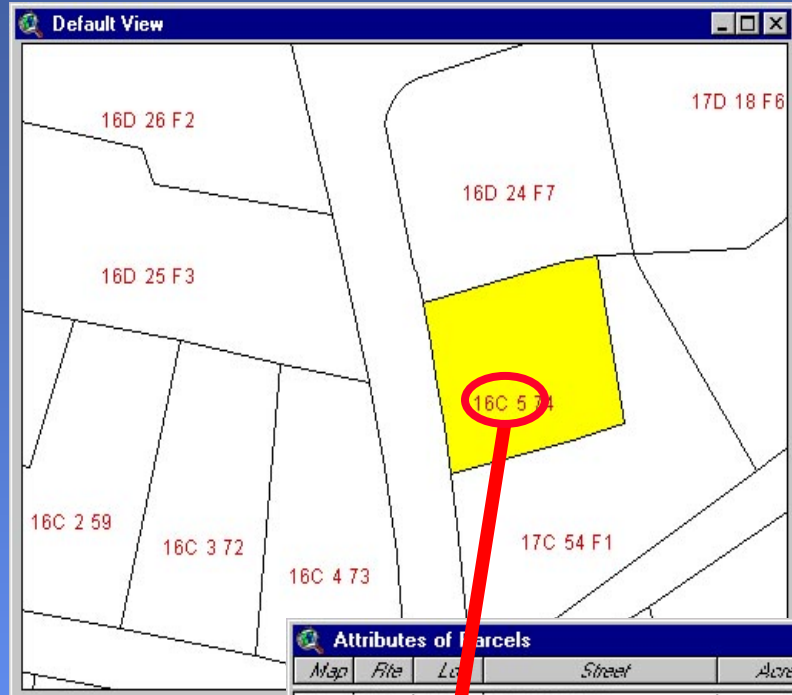


Image Courtesy of URISA

Map Features have Database Attributes

Each parcel polygon is assigned a unique identifier (map-lot). This unique ID corresponds to a row in the Assessor's CAMA system. This allows each parcel to be linked to a data record in the Assessor's data.

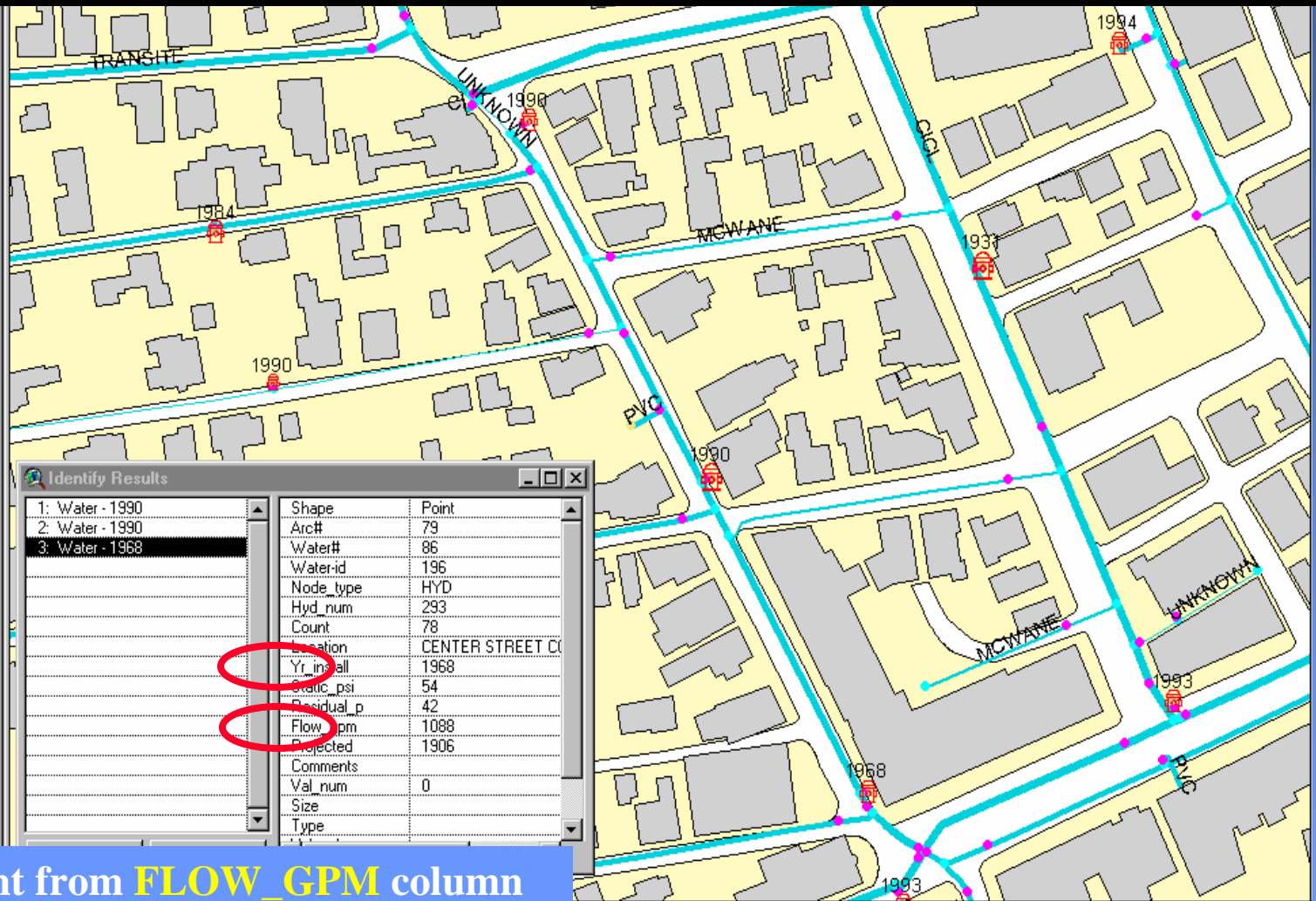
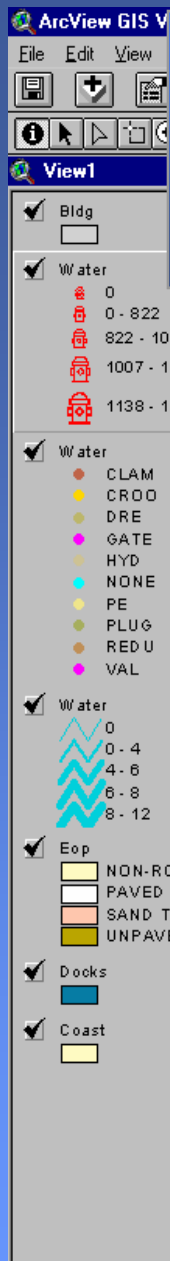
Same approach for all layers: roads, utility systems, zoning, etc.



Map	File	Lot	Street	Acres	Lastname	Firstname	Loc	Loc_street	
6C	140	88	DEERING DR	75600	PAFF	ANDREW	50	DEERING	DR
6C	139	87	DEERING DR	74700	KAZARIAN	ARMAND	60	DEERING	DR
10C	47	D15	VINEYARD AVE	190700	GRIFFIN	GENIE	220	VINEYARD	AVE
6C	138	88	DEERING DR	74000	R A REAL ESTATE	TRUST		DEERING	DR
14C	64	D	STAGE HARBOR RD	131500	ROBERT WILSON I	II TRUST		STAGE HARBOR	RD
17C	54	F	QUASSON RD	240900	SWEENEY	ROBERT	4	SHORE	RD
6C	137		DEERING DR	74000	ANDERSON	H RUSSELL/ET AL	82	DEERING	DR
15C	6		MILL POND RD	0	SMITH	ROY	64	MILL POND	RD
16C	5	74	SHORE RD	208200	NISSMAN	HARVEY	20	SHORE	RD
15C	8	8	MILL POND LN	0	YEAH	COLEMAN	27	MILL POND	LN
5C	52	84	DEERING DR	75200	SHERIN	KEITH	98	DEERING	DR
16C	87	65	HOMESTEAD LANE EAST	0	FORGERON	EDWARD	19	HOMESTEAD LANE	EAS
9D	56	G3	YOUNGS FARM LN	248000	KELLEY	PAUL	27	YOUNGS FARM	LN
9C	52	M3A	BARNHILL MARSH	33500	HARRIS	JULIE		BARN HILL MARSH	
14C	8	3	STAGE HARBOR RD	0	NORMAN	EDWARD	180	STAGE HARBOR	RD
2C		1	MAIN ST	91300	TOWN OF CHATHAM	/ S.C. CEMETAR		MAIN	ST

For example: Fire Hydrant “Attributes”

Attributes drive the map display
And allow you to interrogate for details

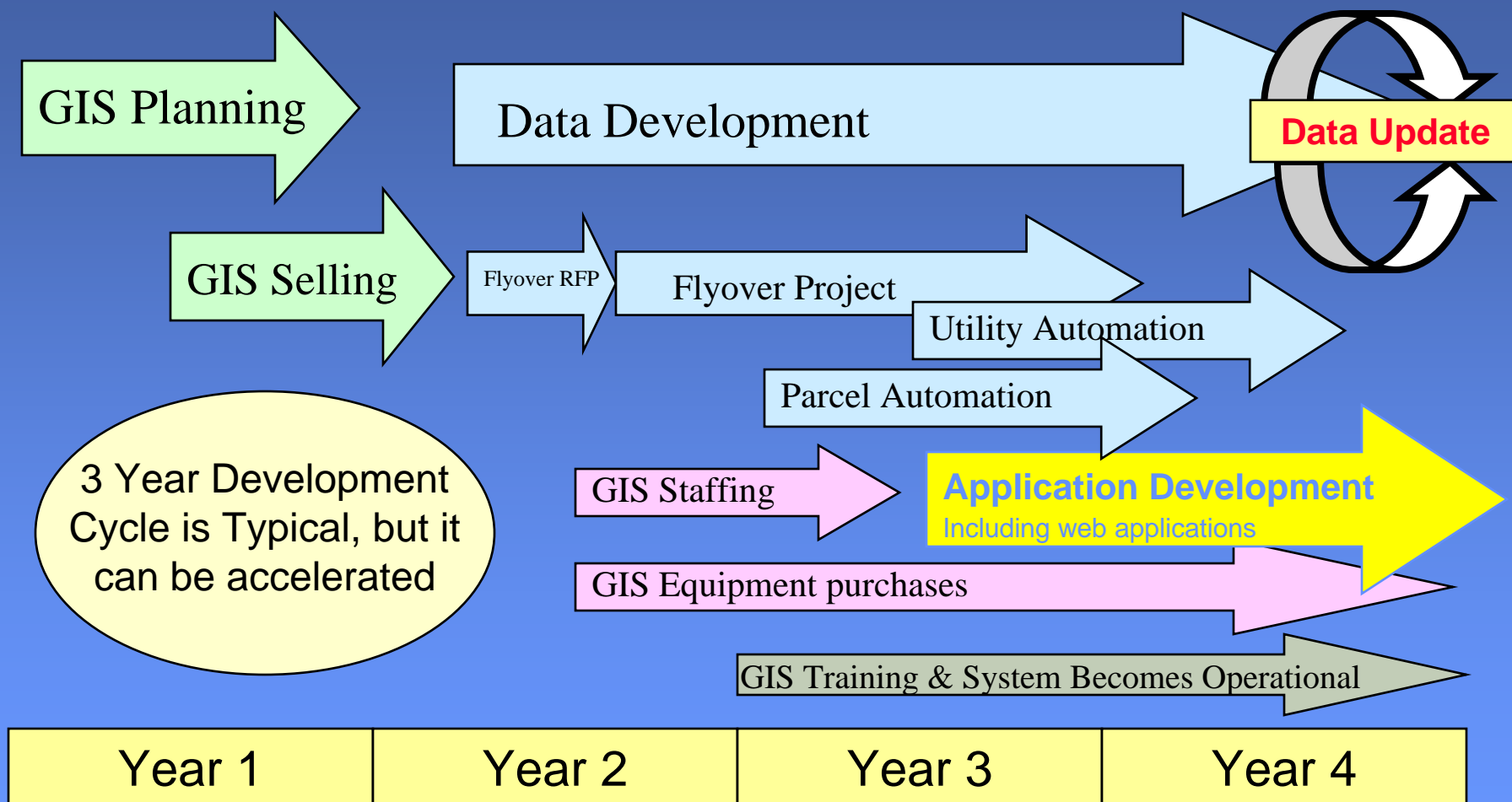


Size of hydrant from **FLOW_GPM** column

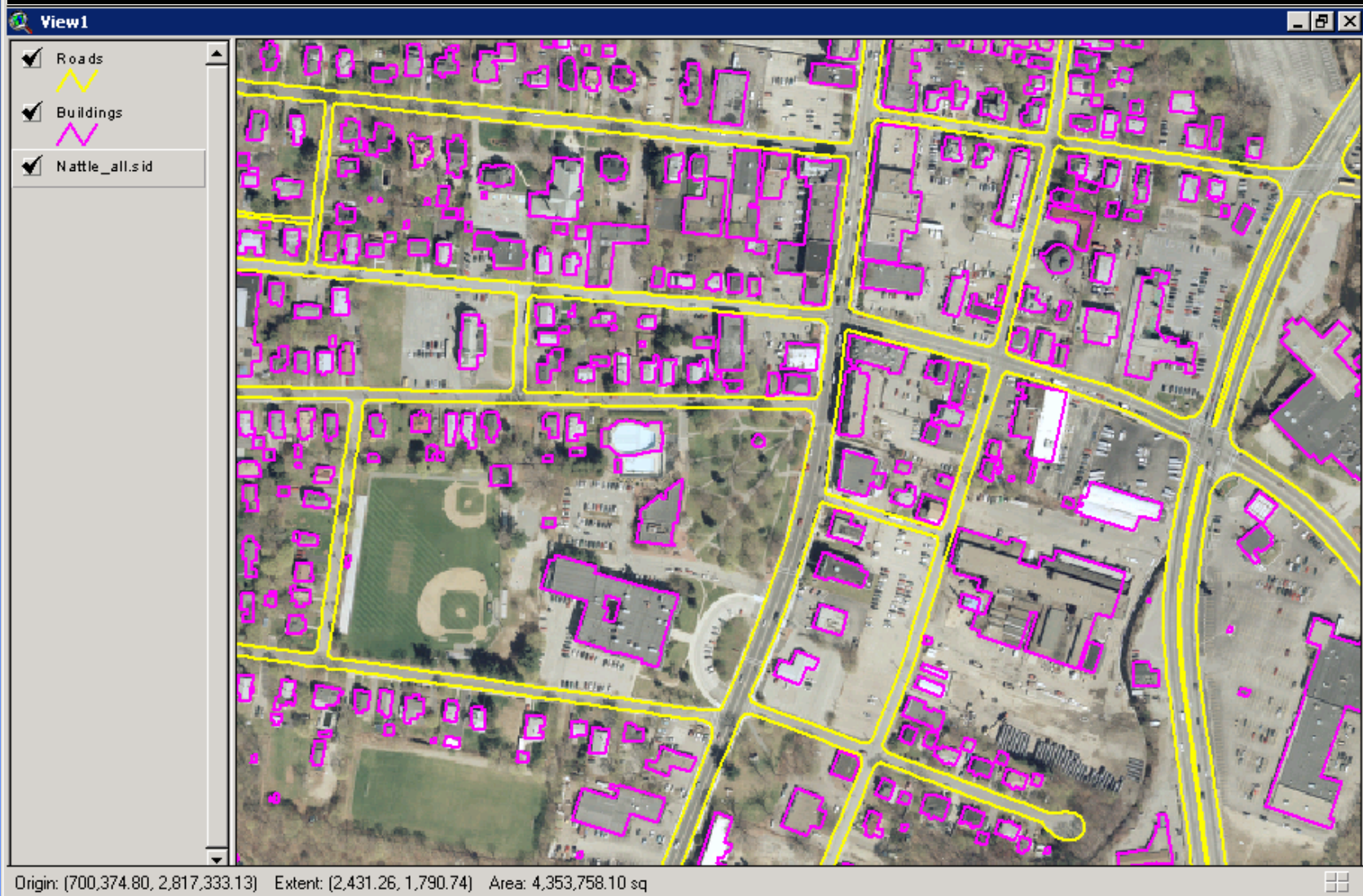
Date label from: **YR_INSTALL** column

GIS Development Lifecycle

Temporal view

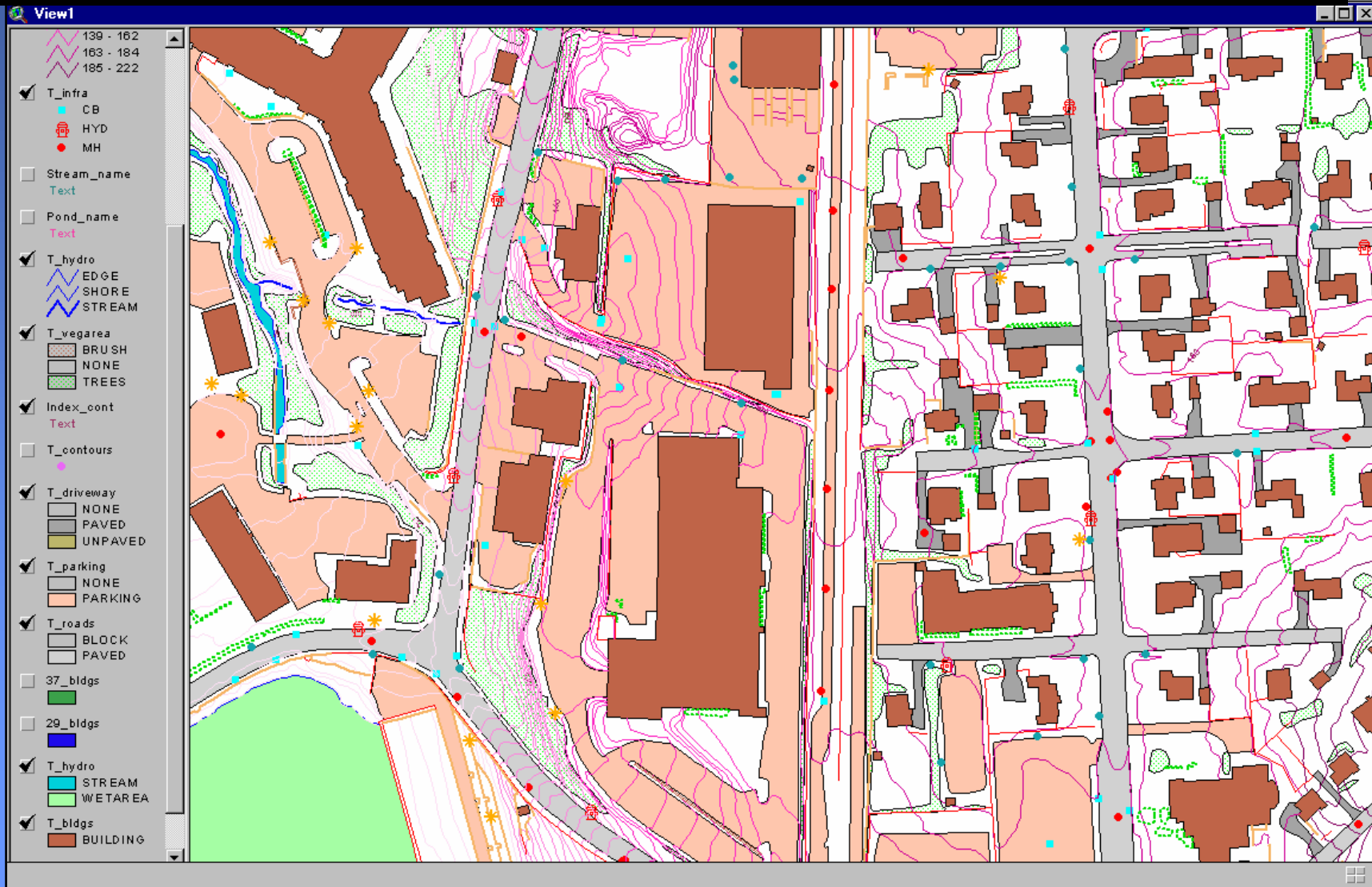


Base Map Data are Derived from Aerial Photography

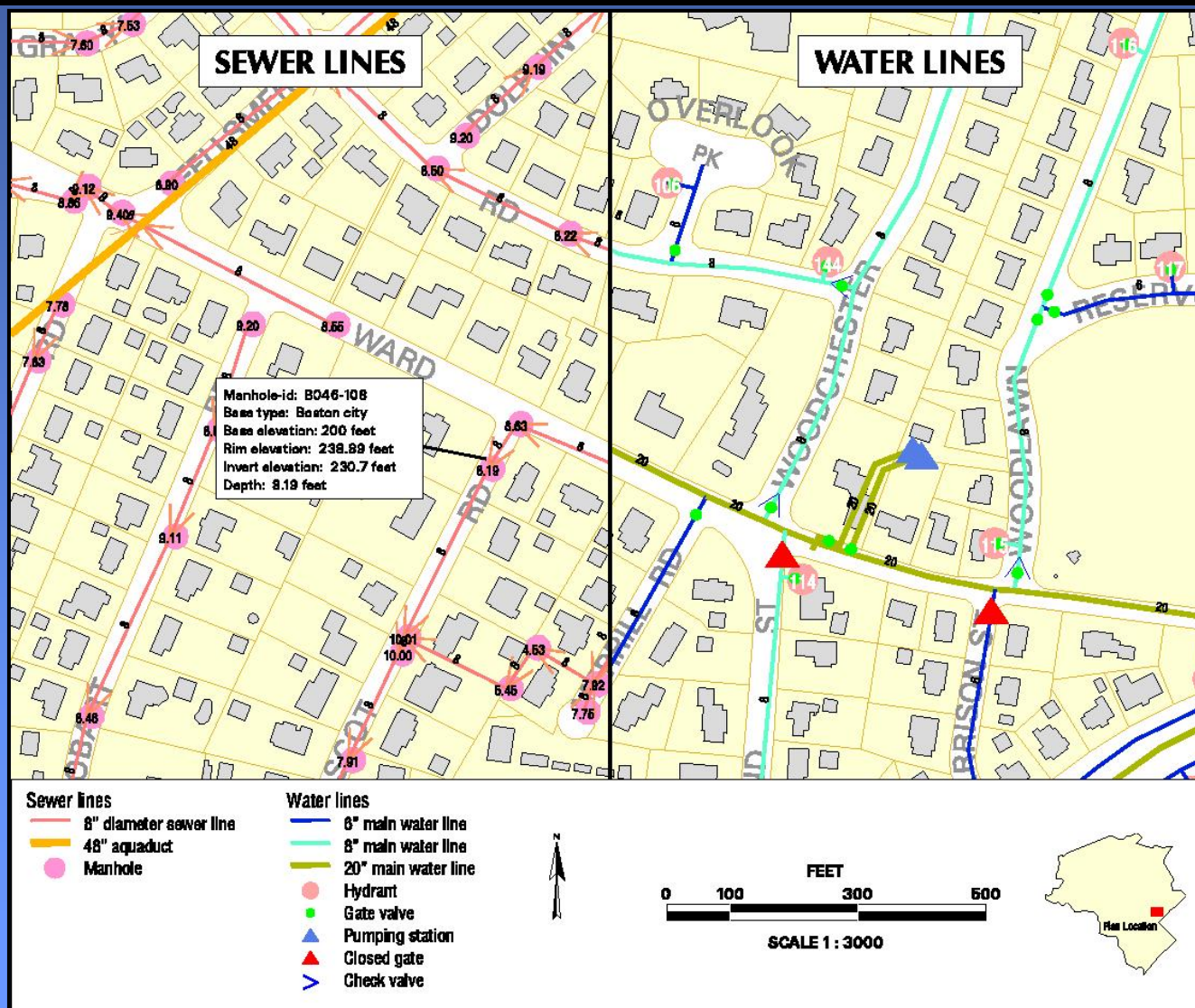


Digital Base Map Layers

Interpreted from flyover

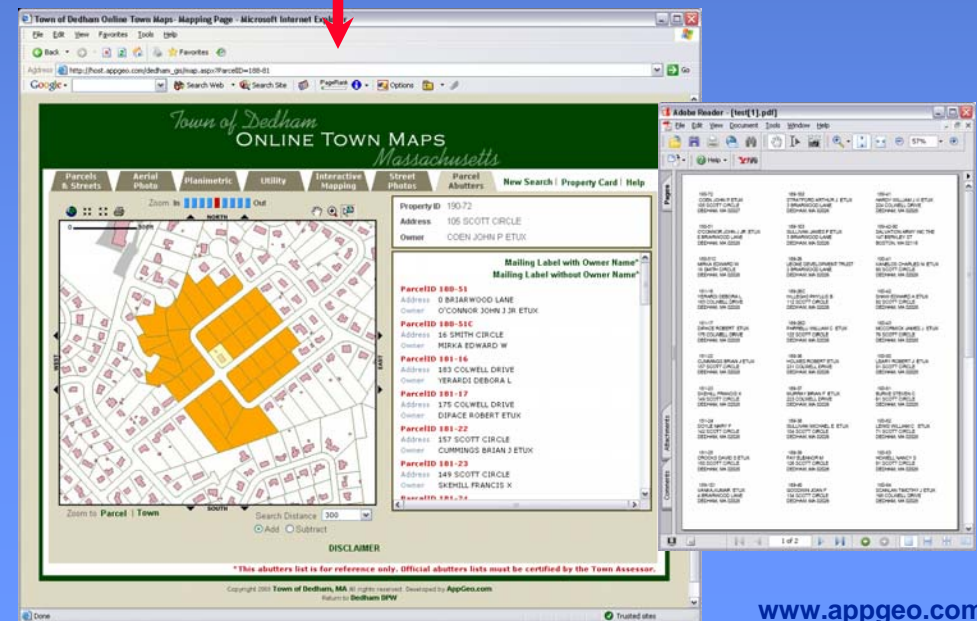
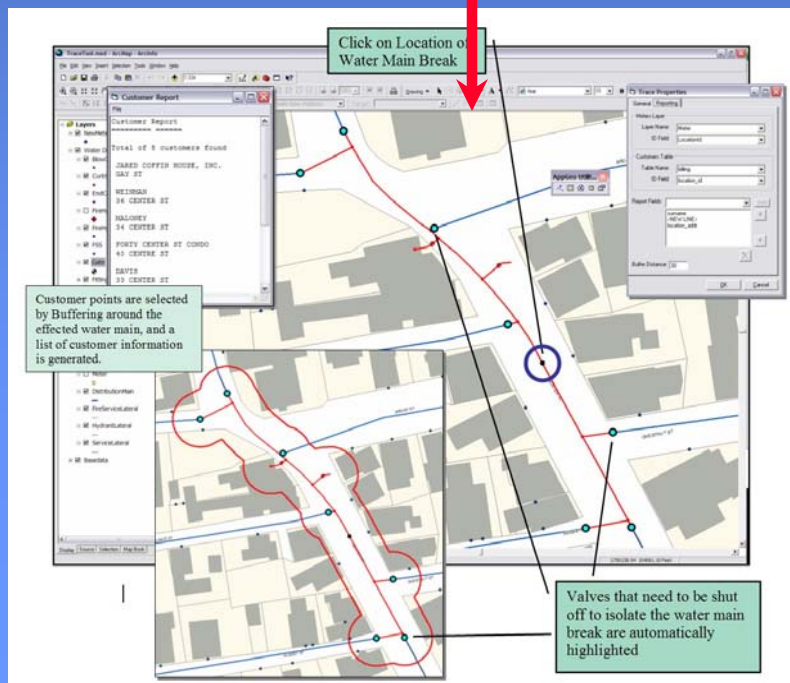
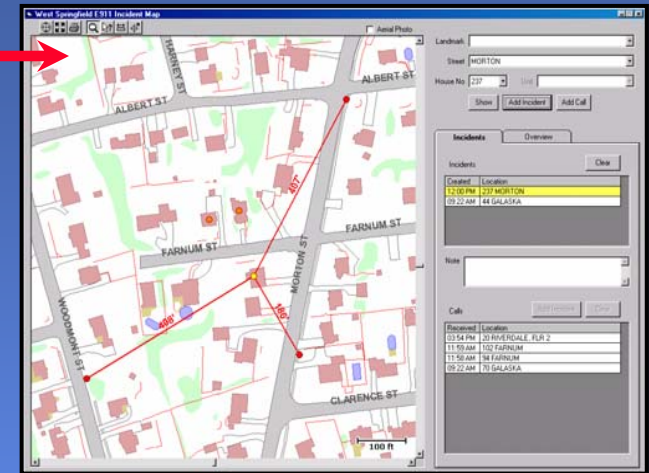


GIS Representation of Infrastructure Data



Examples of GIS-based Analysis & Spatial Queries

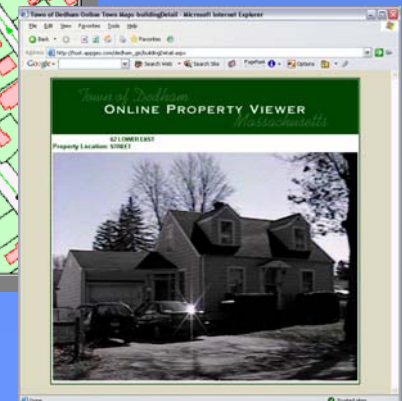
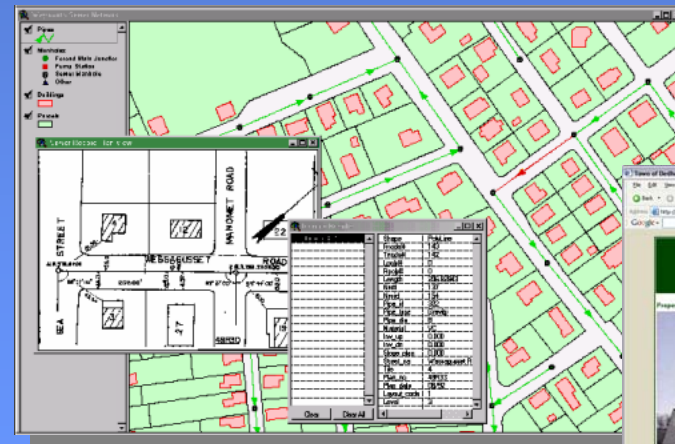
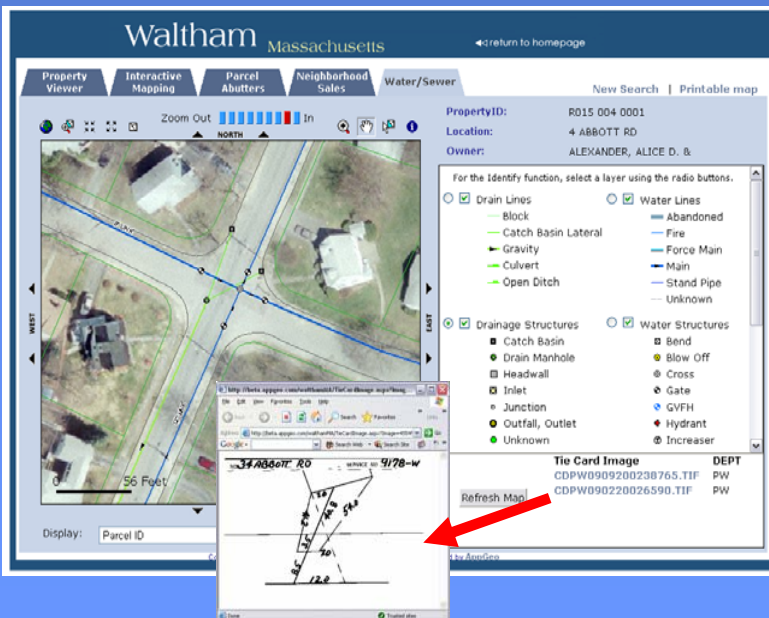
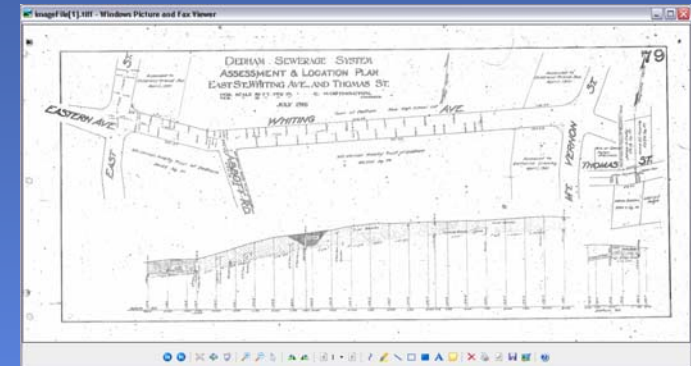
- Proximity analysis
- Buffer analysis
 - Abutter's queries
- Upstream/downstream tracing



GIS Enabled Document Management

Providing access to images

- GIS can be used to retrieve scanned imagery
 - Photos
 - Scanned plans/record cards
 - Documents (e.g. deeds)

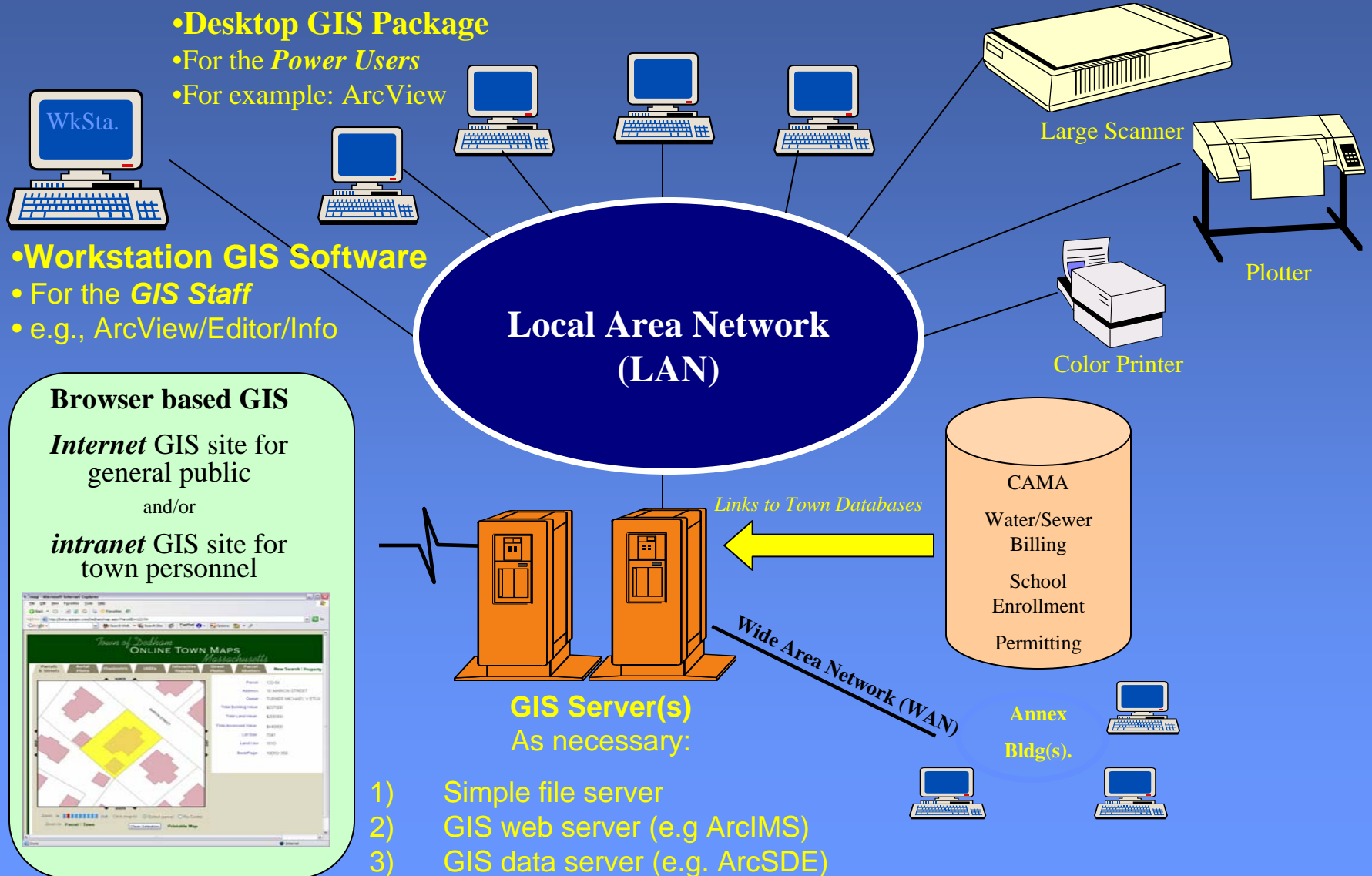


Representative Applications

Common Community/County Apps

- **Assessor**
 - Assessor's map maintenance
 - Support of revaluation (thematic mapping)
 - Abutters notifications
 - Providing public access to data/maps via web
- **DPW/Engineering/Water & Sewer**
 - Water, sewer, drain system mapping
 - Water, sewer, drain network tracing
 - Infrastructure improvement planning
 - Support of special studies (e.g. Master Plans)
 - Support of construction activity
 - Logistics: e.g. snow plot routing
 - Document archive
- **Building Dept.**
 - Permit location mapping
 - Confirm permit applications with spatial criteria (e.g. zoning, historic district, wetlands)
- **Planning**
 - Support at public meetings
 - Zoning (mapping, appeals, bylaws)
 - Grant applications (ISTEA, CDBG)
 - Special projects (e.g. facility siting, economic development)
 - Development/sub-division approvals
- **Public Safety**
 - Support of dispatching
 - Development of "street books"
 - Sensitive receptors/hazards mapping
 - Crime analysis
- **Schools**
 - Redistricting
 - School bussing eligibility
 - School bus routing
- **Health, Conservation Comm., etc**

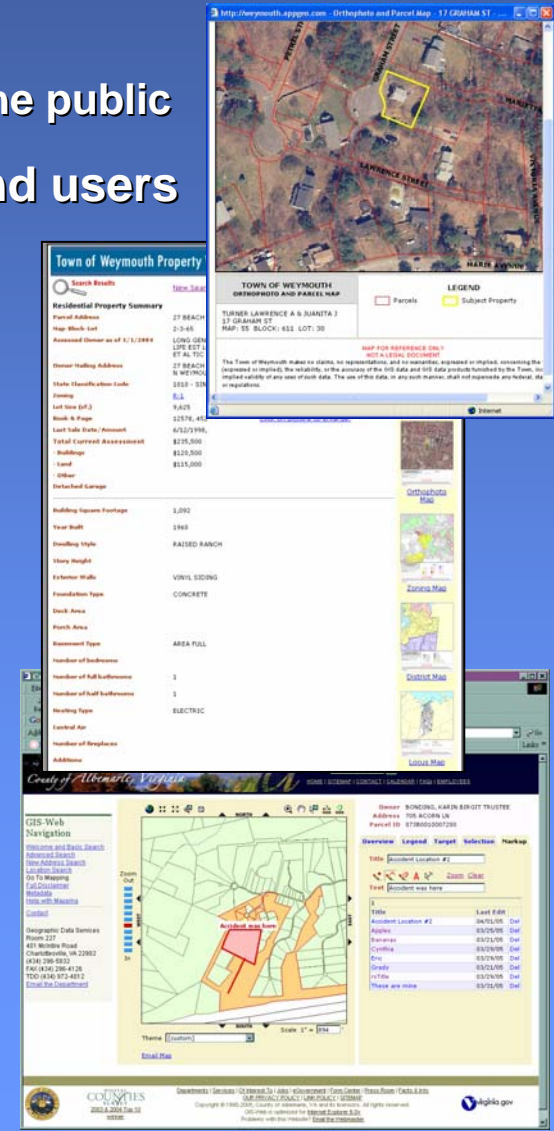
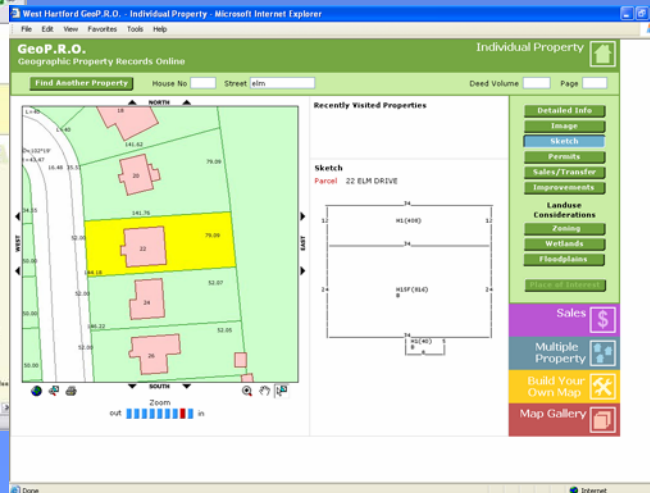
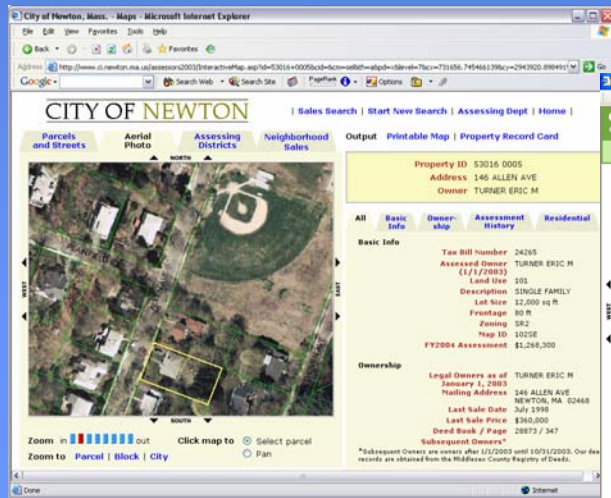
Mature GIS Configuration



Web-based GIS Technology

Primary Driver for Spatial Data Delivery

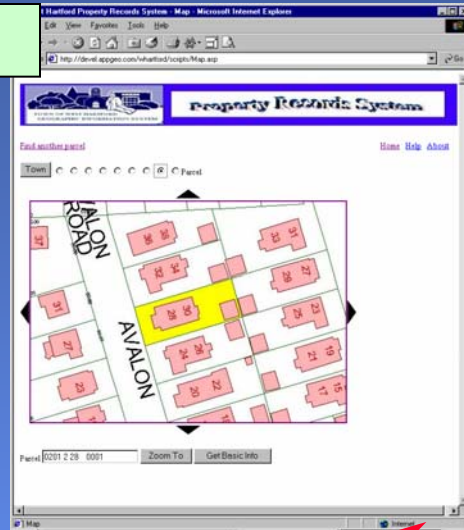
- Browser based applications make the most sense for end users
 - Additional benefit of making information available to the public
- Web-based GIS is replacing desktop GIS for most end users
 - 90% of the people use only 10% of the functionality
 - Web can easily deliver the most important 10%
- People know how to “browse the web”
 - Lowers barrier for learning new software
 - Universal high-speed web access becoming a reality



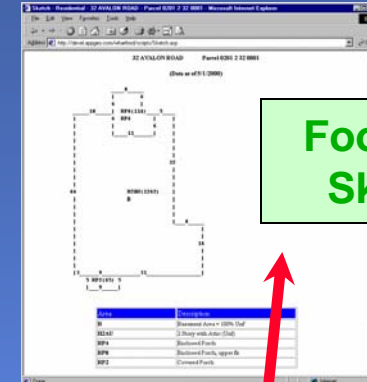
Web mapping: One-stop shopping for all information on a parcel

Minimum number of clicks to info you need

Map



Photo



Footprint Sketch

1. Find your parcel

A screenshot of the 'Property Records System' search interface. It features a search bar, a map view, and a list of results. The search criteria are set to 'Find a Parcel by Address or Owner's Name'.

2. Retrieval all info for that parcel

A screenshot of the 'Property Records System' detailed information page. It displays a table of 'Base Parcel Data' for a specific parcel.

Base Parcel Data	
Parcel Address	17 AVALON ROAD
County	Hartford
Area	22.2 Sq Miles
Population	60,110 (1990 Census)
Current Mill Rate	34.36
Assessment Ratio	70 %
Date of Last Evaluation	10/1/99
Owner Name	ARCINSON, ROBERT C BARBARA A
Owner Address	17 AVALON ROAD
Owner City	WEST HARTFORD
Owner State	CT
Owner Zip	06119
Map Number	836-1004 D-5 / 158
Census Number	4869
Neighborhood Code	030000.00
Property Class	SINGLE FAMILY RESIDENCE

Database Characteristics